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WHAT IT MEANS TO ZONE

BY

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Being a Précis of the Zoning By-law as submitted to the Town Planning Commission of Ottawa by Noulan Cauchon, Chairman and Technical Adviser, and recommended by the Commission to the City Council for Adoption.

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WHAT IT MEANS TO ZONE

BY JOHN M. KITCHEN, O.A.A.

Town Planning

The Town Planning Institute of Canada has decreed that:

Town Planning may be defined as the scientific and orderly disposition of land and buildings in use and development, with a view to obviating congestion and securing economic and social efficiency, health and well-being in urban and rural communities.

Zoning

Zoning is that function of town planning which determines the relative disposition of structure to site, detailing uses, areas, heights, intervals and the occupancy of structure with a view to assuring adequate access of air and the rays of the sun to buildings to the measure of their occupational requirements, and ensuring health, efficiency and amenity to human beings.

To the measure of their deficiency the birth and death statistics are governed.

Andrew Wright Crawford, in the American Civic Association pamphlet "Zoning" says:

The whole purpose of zoning is to encourage the erection of the right building in the right place. It protects the man who develops his property along proper lines against the man who develops his property along improper lines. Rightly understood, zoning means the substitution of an economic, scientific, efficient community program of city building for wasteful, inefficient, haphazard growth.

Edward M. Bassett, in the *National Municipal Review*, supplement on "Zoning," expresses a reciprocal relation when he says:

The truth is that no man can make the best use of his own unless his neighbors are required to make such use of their own as not to injure others.

Zoning is the application of common sense and fairness provided in public regulations governing the

use of private real estate. It is an honest effort to provide each district or neighborhood within a city, as nearly as practicable, with such protection and liberty as are essential in that particular district.

Zoning regulations differ in different districts according to the determined uses of the land, such as residence, business, or manufacturing, the regulations being the same for all districts of the same type.

Zoning is part of a city planning problem. It relates to the transportation system, including streets, street railways, automobile traffic, etc., railroad services, both freight and passenger, and water-borne commerce, if any. Further, it relates to public works, utilities, parks, schools and many special public and private undertakings.

There is frequently confusion in the public mind between the function of a building by-law and a zoning by-law. A building code deals with the technique of structure and the materials of structure, while a zoning code deals with the technique of conditions under which structure should be permitted. It has regard not only to the physical safety of the occupants but to the environmental conditions which affect the health of the people.

Justification for Zoning

The scientific and sociological basis of zoning is provision for the people of adequate sunshine and air, such provision being indispensable for the sustenance of health and efficiency, in fact, of the common welfare of the race.

Solar rays have properties of heat, light and chemical action, which bring comfort, preserve sight, and foster health by dispelling bacteria and disease.

Air is essential to human nutrition mainly by reason of its oxygen content, which, through bodily combustion, the lungs being the firebox of the body, brings heat and chemical reactions that fan the flame of life.

Mr. Barry Parker, the eminent English architect, of Letchworth Garden City, says:

The tenant, probably, does not know that a typhoid fever germ will live for two years in a place where sunlight never penetrates, but cannot live for one hour in the sunlight. He, or she, has probably never realized the signi-

ficance of the fact that a laboratory used for the cultivation of disease germs must have a north aspect. The tenant probably does not know that even in tropical climates, where, in the past, the aim has been to exclude sunlight from living rooms (with a view to keeping them cool), it has been found necessary to pass legislation, making it impossible for a wall to be built in such a way that it prevents the rays of the sun from reaching the base of another wall for at least a minimum of two hours a day. It has been learned that in tropical climates in particular it is to those places to which the purifying rays of the sun never penetrate where disease germinates and flourishes. It is not a question, merely, of comfort, but of healthiness and unhealthiness; briefly, the fact is that any room into which the sun never penetrates nor finds its way is an unhealthy room.

Professor East, of Harvard University, in his book, "Mankind at the Crossroads," says, with reference to an investigation into slum conditions:

Where housing conditions were good and the home was clean and dry, the infant mortality was 105; where similar clean houses were damp it rose to 127. In moderately clean and dry houses it was 158; in moderately clean and damp houses it was 171. Where houses were dirty but dry it was 162; where they were dirty and damp it was 204. Similarly, when the houses were classified on the basis of the water supply being inside or outside, the rates were 116 and 189 respectively.

Justification for regulating the proportionate area of a lot which may be built upon and the angles and dimensions within which construction may arise thereon, lies therefore, in the vital necessity of providing sunshine and air to the interior of the structure for the preservation of health and efficiency and for the maintenance of life.

Differences in the nature, density, intensity and duration of occupancy, or of work, determine the variations in restrictions.

As penetration of sunshine and air is the objective, its attainment involves a sufficiency of open intervals of dimensions increasing in ratio to heights.

To regulate the disposition and size of structures successfully, the angle of minimum light penetration should be determined and enforced.

This scientific view of the question, when recognized, will dispel the popular illusion that zoning, with its regulations for obtaining access of air and solar rays to human dwellings, is an aesthetic whim. When men come to realize that such regulations are really means to the maintenance of healthy human life, all opposition to them will disappear, and they will be accepted as the ordinary sanitary regulations are today, which a generation ago were looked upon as whims.

The haphazard manner in which cities have been allowed to grow and develop, without order or direction, has been repeatedly brought home to us through the ever increasing number of representations being made to civic officials on behalf of citizens for restrictions against encroachments.

These encroachments, either threatening or established, take many forms, such as stores, factories, garages invading residential districts; apartment houses locating amidst districts of select homes and very often being built up to the street and side lot lines, where the adjoining residences have observed setback lines and preserved ample front and side yard areas.

Such disregard of the welfare of community interests is manifestly wrong and socially unjust.

It is this stupid, wasteful jumble which zoning will prevent and gradually correct.

Legal Provisions for Zoning

Existence resolves itself into the living conditions of Home and Work. Home districts seem to reveal their physical attributes and social significance most clearly by degrees of density; Work districts by degrees of intensity.

Density of population and intensity of work conditions may be best controlled by restrictions of use, areas, heights and intervals of buildings, i.e., zoning, the legal provisions for accomplishing which vary considerably in the different provinces and in some are quite inadequate for the purpose.

Much can be attained by skilful recourse to Municipal, Health, Factory, Registry, Planning and Development Acts where such exist.

It is anticipated that planning and development acts fully providing for zoning will be forthcoming throughout the Dominion in due course. These will simplify procedure and enable the general public more easily to grasp the purpose and results of urban and rural planning, interplanning and zoning.

Classification of Uses

The use and development of land should be zoned into two broad fundamental classifications, Home Districts, subdivided by degrees of density, and Work Districts, subdivided by degrees of intensity.

From zoning standards of limitations in bulk congestion of structures, there devolves a coterminous restriction of relative occupational congestion under Health and Factory Acts.

This is the most effective method of obviating congestion in density or intensity.

Home Districts—Density

Zoning functions to preserve desirable living conditions and to rehabilitate those which are deficient.

In the relative congestion of dwellings and of their occupancy, density is the yardstick of their healthfulness, efficiency and of the amenity afforded, It also reveals their sociological import.

The use of land and buildings, as existing and permissible within Home Districts, should be zoned under three minor classifications, Minimum, Mediate and Maximum, according to the relative degree of density, thus:

HOME DISTRICTS

Minimum Density Districts

Individual detached single family dwellings with accessories on individual lots.

Mediate Density Districts

Semi-detached dwellings, duplex houses, multiple dwellings.

Maximum Density Districts

Apartment houses, flats, tenements, boarding and rooming houses.

Such restrictions may permit of the Minimum Density conditions obtaining within the designated Mediate, and likewise of the Mediate within the permissible Maximum, but never inversely, except as a non-conformity.

Work Districts—Intensity

Making a living is work in kind and degree. The term Work Districts seems therefore more generic and is susceptible of simple differentiation in degree of intensity.

As therefore, Work Districts display their activities to advantage by degrees of intensity, the use of land and buildings, as existing and permissible within Work Districts, should be zoned under three minor classifications, Minimum, Mediate and Maximum, according to the relative degree of intensity, thus:

WORK DISTRICTS

Minimum Intensity Districts

(Distribution)

Offices, stores and proportionate light industry, hotels.

Mediate Intensity Districts

(Storage)

Warehouses, light industry, motor service stations, public garages, repair garages, livery stables.

Maximum Intensity Districts

(Production)

Industrial plants, mills, factories, fabrication industries, lumber yards, storage yards.

Such restrictions should permit of the Minimum Intensity obtaining within the Mediate and of the Mediate within the Maximum. Home Densities, likewise, may be permitted within Minimum and Mediate Intensity Work Districts, but should in themselves conform to restrictions of area, height and also of exterior air and sunshine provisions inherent in their relative classification.

As dwelling within industrial areas is not healthy and involves in consequence a further needless limitation of certain industrial processes, the inclu-

sion of a Home Density should be prohibited in a Maximum Intensity Work District, although exception may be made to the extent of accommodation for necessary caretakers.

A Mediate Intensity which is a related light industry accessory to a Minimum Intensity should be permissible therein, but should not be in excess of one-quarter of the floor space of the area of the building occupied by such Minimum Intensity.

Institutions—Disturbance

Institutions are organizations which function to promote, fulfil or express the abstract or the material cultural ideas of the race.

The relation of Institutions to living conditions may be well interpreted by degrees of disturbance.

The plan authority should determine any erection, construction or activity, as existing or as where proposed, to be an institution relatively as such in a minimum, mediate or maximum degree of disturbance, gauging the effect of its proximity or activity on the inherent or negotiable value and also upon the health, amenity or general character of the surroundings.

Institutions in a Home District should be subject to the restrictions of area, height, intervals and also of exterior air and sunshine provisions of the relative classification within which they may be situated.

Institutions in a Work District should in themselves conform to the restrictions of area, height, intervals and also of the exterior air and sunshine provisions inherent in their purpose.

Noxiousness—Deterioration

Noxiousness in zoning indicates any erection, construction, condition, activity or danger, disquieting, offensive or harmful to mind or body through the senses, or which in the nature of things or through the properties of matter or from aversion lessens values, efficiency or amenity.

Noxiousness is not a classification *per se*, but is a consequence of incompatibility in relation to environment.

An erection, construction, activity or danger which is acceptable in one district may be noxious in another. A public garage which is normal in a Mediate Work Intensity District would be noxious in a Home District.

Determination of the degree of noxiousness of a given structure, activity or danger should be by gauging the effects of its proximity on the inherent or negotiable value or on the healthfulness, efficiency, amenity or general character of the surroundings.

Height Restrictions

Height or area regulations should be coterminous with the various classifications. Primarily, the immediate vertical elevation of the outer wall of any structure should be limited to a height equivalent to the width of the street upon which it fronts, with the reservation that the erection may go higher if it or the upper part thereof is set back within a receding angle formed from the centre of the street allowance to the permissible coping height of such outer wall. This rule is taken to approximate a normal balance of public services being afforded the population which can be healthily sheltered in such structures, to its receiving adequate air and light, also to ensuring it sufficient circulation and transportation by such streets. This general rule is taken as the one best qualified to obviate congestion and relate equitably the use and development of the city lands to health, efficiency, and amenity.

Height regulations in their control of size enable also design to ultimate purpose, in adequate capacity and flow, of the sewers and mains below the surface.

Height regulations should be further restricted in residential districts, that of single family homes being restricted to a height equivalent to the width of the lot upon which the structure is located, but not in excess of forty feet, duplex and terraced houses to a maximum height of forty feet, and apartment houses to a maximum height of sixty-five feet.

Rear and side elevation heights, and the height of courtyard walls should be limited, respectively, by the depth of the rear or side yard and by the least dimension of the court, although all height regulations should be subject to the receding angle reservation.

Area and Interval Restrictions

Restrictions of the proportionate area of a lot which may be built upon and of the intervals within

or without the structures thereon should be based upon affording adequate sunshine, light and air to ensure health and efficiency in living and working as may be conditioned for the permissible use of the structure. Details of areas and intervals should be stipulated in relative percentage and, where possible, in measurement and angles in relation to heights.

Minimum rear and side yard area and dimension regulations should be imposed on all conditions where light is essential to use and the control of the location of windows in side walls facing on side yards should be reserved under regulation, in order that there may be assurance of light penetrating where and as originally intended.

Non-Conforming Uses

Non-conformity is a status of density, intensity, institution or noxiousness obtaining within an area of greater restriction in permissibility. It may obtain by reason of pre-existence to zoning, as nominally indefinite, or as subject to opportunity, and persists largely by reason that laws are rarely retroactive.

Non-conformity should, in general, be restricted in permanency by limiting, to once only, structural renewals to 50% of the building values, exclusive of foundations, and by limiting conversion or enlargement of use to one of conformity.

Where a non-conforming status is detrimental to the general welfare of its surroundings, it should not be allowed to extend, enlarge, become aggravated or be renewed, for, where erections, constructions, activities or dangers of a non-conforming condition or use are of a degree detrimental to the general permissible character of a district, they constitute a species of noxiousness.

Non-conforming condition, use or activity should not be altered, enlarged, renewed, or converted to other condition, use or activity at the expense or to the detriment of a conforming condition, use or activity.

Procedure in the Preparation of a Zoning Ordinance

(1) The first step towards zoning is to make an examination and official record upon charts of the status of living conditions governing homes and work as existing at date.

For the purpose of simplicity, co-ordination and visualization, certain symbols and colourings should be conventionalized and used in the manner herein-after set forth to allow of easy expression of the existing conditions and of such progression and combination of circumstances as may be expected and allowed to develop.

Zoning regulations are not devised to be retroactive.

(2) The second step is for the planning authority in consideration of the status revealed, to adopt zoning regulations of permissibility that will ensure health, efficiency and amenity in so far as may be to existing regulations and guarantee them in future development.

The restrictions as to the area of a lot that may be built upon, the intervals within and without the structures, the heights to which these may be built in whole or in part, the nature of and the uses to which structures may be put, and the density and character of occupancy thereof should be prescribed in official regulations and be displayed insofar as may be upon the official charts.

The aim should be, as far as possible, to make the regulations and restrictions of area, heights, intervals and the disposition of cubage (bulk) coterminous within the several home and work district classifications. This procedure eliminates the necessity of providing and preparing height and area symbols designating permissibility, likewise designating the coterminous regulation governing height and areas.

A consideration in determining permissible use of localities and structures is the adequacy of the public services as to:

(a) The location, curvature, grades and terminal adequacy of railroads.

(b) The direction, grade, width, surface and general carrying capacity of streets, thoroughfares and arterial highways.

(c) The capacity, frequency and speed of street railways.

(d) The size, character, capacity and pressure of water mains.

(e) The size, character, capacity and flow of sewers.

(f) The capacity of light, heat and power mains.

The official charts of status are the forecasts upon which will be based future permissibility and the by-laws necessary for the enforcement thereof.

(3) Thirdly, the charts and proposed regulations designing future permissibility should then be exhibited at public meetings for the perusal and attainment of the views and co-operation of interested parties, thus enabling revision by the plan authority towards amplification or elimination as the circumstances revealed may warrant.

The property owners collectively should, in so far as possible, be allowed, subject to the adequacy of the public services, to determine the permissible use of their related areas.

(4) Fourthly, when final approval has been given the determining charts and regulations, the by-laws should be enacted by legal authority.

Provision should be made for future appeal in respect of such revisions and alterations as the changing circumstances of time and development may warrant. It is obvious from the nature of the case, that even if a zoning ordinance were drawn with super-human perfection, time and the natural growth of the community might show the need of modification. The purpose of a zoning ordinance is not to stifle growth, but only to insure that, instead of taking place sporadically and wastefully, it shall go on in an orderly way, in response to generally recognized needs and with due notice to all concerned.

It is not the desire nor the intention of the zoning authority to restrict districts without regard to the opinions or desires of owners of property located therein or affected thereby, but rather to control future permissibility as far as possible from the status of existing home and work conditions as delineated on the charts, they being considered a forecast upon which to base future permissibility.

Symbols

To enable the easy recording and recognition on zoning charts of the status and the permissibility in the use and development of land, a constructive system of basic classification symbolism was, after much study, prepared and adopted for Ottawa. This system is of such simplicity as to be easily comprehended by the most inexperienced, and its adoption had proved particularly successful and has expedited the field work to an extent beyond expect-

tation. Its simplicity is such that written notes are practically eliminated from field work, the six basic symbols forming the system in the hands of an intelligent individual being such as to cater to almost every condition arising in the field.

The symbols used are a constructive multiple of a single stroke, those denoting Home Density or permissibility consisting of a single line, or a multiple thereof, according to the relative degree of density, and drawn diagonally downwards from right to left, while those denoting Work Intensity or permissibility are comprised of a similar simple line series, having the same relative multiplicity, but drawn diagonally downwards from left to right. The distance between the line groupings may be varied to suit the scale of the chart, upon which all symbols are superimposed normal to its horizontal plane, thus avoiding any confusion liable to arise from possible distortion of the plane of the symbol with reference to the chart.

The status of land and building as actually developed is indicated on the charts by applying the relative symbols to the interior portions of the lots, the permissibly classification for future development being indicated by the application of the relative symbols on the outer borders of such lots.




The symbols retain their definition under a wide range of scale and reduction and further permit of easy reproduction in black and white.

Non-conformity may be recognized where symbols on charts show a lesser restriction in status within a higher restriction in permissibility.




In addition to the line symbols, there has been adopted for use in the case of small scale maps a colour scheme graduated in co-ordination with the six basic home and work classification symbols, the colours of the solar spectrum being used for the purpose. This allows of the amplification of the chart symbols at a minimum of cost, as three of the six colours, being combinations of two of the basic spectrum colours, the six colours can be reproduced in three printings.

The nature of things and the inherent properties of each grouping are indicated in colours and symbols as follows:

HOME DISTRICTS

	Symbol	Colour
Minimum Density		Spectrum Red
Mediate Density		Spectrum Orange
Maximum Density		Spectrum Yellow

WORK DISTRICTS

	Symbol	Colour
Minimum Intensity		Spectrum Green
Mediate Intensity		Spectrum Blue
Maximum Intensity		Spectrum Violet

What Zoning Accomplishes

Zoning gives everyone who lives or does business in a community a chance for the reasonable enjoyment of his rights. At the same time it protects him from unreasonable injury by neighbors who would seek private gain at his expense.

Zoning will prevent an apartment house from becoming a giant airless hive, housing human beings like crowded bees. It provides that buildings may not be so high and so close that men and women must work and live in rooms never freshened by sunshine or lighted from the open sky. Zoning secures a healthy relation between living conditions in the home and at work.

Zoning will allow no one to put up a large apartment house overshadowing your home, stealing your sunshine, and spoiling the investment of years of savings. Nor is anyone at liberty to erect a noisy, malodorous public garage to keep you awake at nights or to drive you to sell out for half of what you put into your home. Zoning stabilizes amenity as due in social equity. Zoning amenitizes.

By zoning, waste of many millions of dollars from the scrapping of buildings in "blighted districts" may be eliminated. Zoning stabilizes effie-

iciency and values as due in economic equity. If a city is zoned, property values become more stable, mortgage companies are more ready to lend money, and more houses can be built.

Zoning avoids the error of trying to apply exactly the same building regulations to every part of a city regardless of whether it is a suburban residence section, a factory district, or a business or a financial centre. It fosters civic spirit by creating confidence in the justice and stability of the protection afforded. Zoning regulations differ in different districts according to the determined uses of the land for residence, business or manufacturing. Industry will be more efficient, as well as homes more wholesome, if kept generally separate. Separation need not mean great distances for the workers to travel. Concentration of uses and a fair apportioning of districts should reduce the amount and cost of all transportation and secure economies not only directly, for the worker, but indirectly in the costs of production and the marketing of goods.

Zoning is an elemental factor in obviating the congestion of buildings and concurrently of population and traffic.

Again, miles of streets and sewers, and other utilities, such as are ordinarily built when land is subdivided for dwellings need never be constructed if we know that these areas will be devoted mainly to large factories.

Altogether, zoning will assure orderly growth and permanence in the development of a city, enhance the amenities of and insure healthy and sanitary homes for its citizens, prevent congestion both in home and commercial districts, maintain the negotiable value of land and buildings and eliminate the problematical installation of public utilities, such as sewer and water services, which, under haphazard development, are constructed on a basis of probable demand, the ultimate demands likely to be made upon them being commensurate with indefinite future development.

It therefore necessarily follows, that where extensive town planning of either a corrective or comprehensive nature is or is about to be adopted, the establishment and stabilization by zoning of those conditions obtaining in a city upon which the efficacy of town planning depends is indispensable.